

CYTOLOGICAL EVIDENCE FOR THE TAXONOMIC POSITION OF SCHIZACHNE PURPURASCENS

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During a cytotaxonomic study of the genus *Melica*, it became necessary to investigate the status of *Schizachne purpurascens* to determine whether or not it should be included in the genus *Melica* or whether it should be treated as a separate genus as suggested by Swallen (4). The natural relationships of the monotypic genus *Schizachne* Hack. have long presented a problem to students of the Gramineae. During the course of its taxonomic history, *S. purpurascens* has been placed in *Avena*, *Trisetum*, *Melica*, and *Bromelica*.

From the morphological standpoint, *Schizachne* shows considerable affinity with *Melica*. The possession of sterile florets at the apex of the spikelet, weak glumes, rounded lemmas, fleshy truncate lodicule, dichotomously branching stigmas, and free caryopses are admittedly indicative of close relationship to *Melica*. *Schizachne* differs from *Melica* in the presence of long bristly hairs on the callus and in its divergent awns.

The karyotype of *Schizachne purpurascens* has now been studied and compared with those of *Melica* species. Specimens of *S. purpurascens* collected near Providence, Rhode Island, were supplied through the kindness of Dr. G. L. Church of Brown University. Seed of *Melica imperfecta* from San Benito County, California, was provided by Dr. G. L. Stebbins, Jr., of the University of California. Root-tips of these were killed and fixed according to Randolph's (1) modification of Navashin's fixative, sectioned at 10 microns, and stained with gentian violet. All of the species of *Melica* thus far investigated possess nine pairs of relatively large chromosomes with considerable difference in their length and in the position of the centromere (fig. 1a). This remarkable uniformity of the chromosome complement among the species of *Melica* was first noted by Stebbins and Love (3). *Schizachne purpurascens*, on the other hand, possesses ten pairs of small chromosomes with little difference in size and all with median to submedian centromeres (fig. 1b). The contrast in number and morphology of the chromosomes in addition to the external morphological differences between *Schizachne* and *Melica* provides ample evidence, in the writer's opinion, for the exclusion of *Schizachne purpurascens* from the genus *Melica*.

Swallen (5) suggested that the genus *Amphibromus* is most closely related to *Schizachne*. On morphological grounds (the cytology of *Amphibromus* is not yet known) this does not seem very plausible as the thin, lanceolate lodicules and the pubescent caryopses of *Amphibromus* would seem sufficient to separate it from the genus *Schizachne*. This viewpoint is furthered by a con-

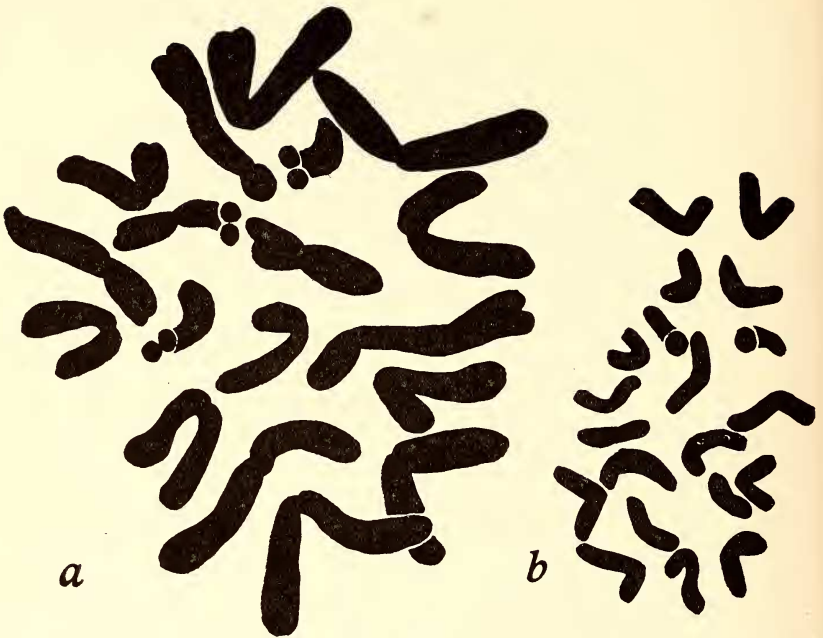


FIG. 1. Karyotypes of *Melica* and *Schizachne*. a, *Melica imperfecta*, $2n=18$; b, *Schizachne purpurascens*, $2n=20$. (Drawings made with camera lucida at a magnification of $5000\times$ and reproduced at $3000\times$.)

sideration of the fact that *Amphibromus* is confined to Australia and South America, while *Schizachne* is found only in the northern hemisphere.

Skorniakov and co-workers (2) have suggested that *Schizachne*, *Melica*, *Glyceria*, *Pleuropogon* and *Anthochloa* be segregated as the tribe *Melicineae*. This viewpoint has much to recommend it; the relationships of *Schizachne* in all probability lie with the above genera.

The author is glad to acknowledge assistance from Dr. G. L. Stebbins, Jr., in this study.

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November, 1943.

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